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(11)

EP 1 166 666 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.01.2002 Bulletin 2002/01

(51) Int Cl.7: **A42B 3/22**

(21) Application number: **01114957.2**

(22) Date of filing: **20.06.2001**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **29.06.2000 IT MI001460**

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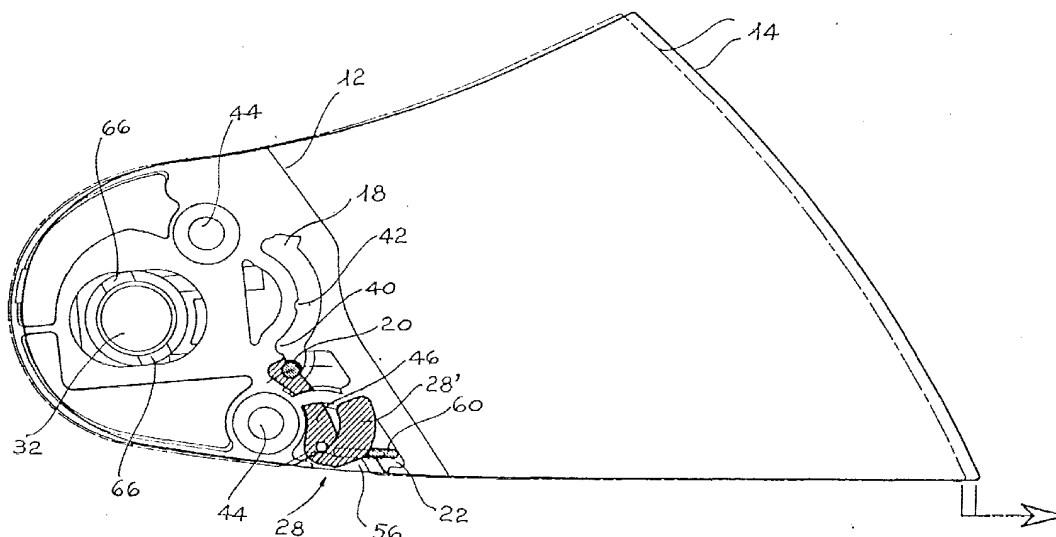
(54) Protective helmet

(57) A protective helmet with a partializable visor comprises a bubble or cap (10) from plastic material, a sector or under-plate (12) fixed to the opposite sides of bubble (10) in the rear zone, a visor (14) articulated on said under-plate (12) through opposed projecting collars (36) formed along the internal front of said visor, each of said under-plate (12) comprising:

- a through-opening (16) circumscribed on the inner front by perimetric shoulders (17);
- a mobile cursor (30) included in said opening (16)

- and connected to one of collars (36) of visor (14);
- a shaped through-slot (18) obtained before opening (16), oriented in a substantially vertical direction and constituting the sliding and stabilization seat in fixed points of a pawl (20) integral with the internal front of each side of visor (14);
- at least a through-opening (24) or (26) for housing a hook-like tilting lever (28), suitable to position with its upper end in the lower external part of said slot (18).

FIG. 3



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Description

[0001] The present invention relates to a protective helmet with a partializable visor.

[0002] More particularly, the present invention relates to a protective helmet of the so-called integral type, utilized especially by motorcycle drivers, and intended for the protection of the head in case of impacts and accidents.

[0003] As is known, in order to preserve as much as possible the safety of vehicle users, especially motor-vehicles drivers, protective helmets are widely used, that envelope the head in a more or less complete manner. A diffuse type of protective helmets, utilized also in the sport-and athletic field, consists of a protective bubble from plastic material that covers the whole head, including the front part of the face. This type of helmets, called integral helmets or helmets with chin protector, ensure a complete protection of the head, also against insects or dust that can hit the face of the driver. While this protection is complete, the integral helmets have some drawbacks, related especially to the discomfort caused users by poor aeration. Even if it is padded and the touch with the skin is made comfortable, a bubble that cover the head entirely is always a constriction element, especially with high temperatures, so that the users who wear helmets of the integral type are in a condition far from being optimal from the point of view of air change and ventilation.

[0004] In order to obviate this drawback, the integral helmets of the known art have been provided with a movable visor, i.e. a shaped transparent element placed in the front zone, which, besides providing an adequate visibility to the vehicle driver, can be lifted with respect to the structure of the helmet with which it is associated.

[0005] The lifting of said visor, whose convex shape substantially coincides with that of the aforesaid bubble, determines only the creation of a more or less wide slit starting from its lower edge. In fact, the opposite upper edge of the visor remains systematically in touch with the shaped surface of the helmet, which, among other things, limits its lifting or upward travel. In spite of the traditional inclusion of slits or additional air inlets, obtained on the bubble that forms the helmet, such lifting of the visor does not allow to create an adequate air re-circulation, with the consequence that the user is almost always obliged to drive in uncomfortable conditions.

[0006] A further drawback which is found in integral helmets concerns the difficulty of handling the opening and closing of the visor. In fact, this operation requires in most cases the locking and unlocking of said visor by means of eccentric levers, located externally with respect to the lateral-rear zone of the helmet. It is, in substance, an operation that cannot be performed at once and that can be the cause of distraction during the driving and lead to severe consequences.

[0007] Object of the present invention is to obviate the above drawbacks.

[0008] More particularly, object of the present invention is to realize a protective helmet whose visor can be moved in such a way as to allow the adequate re-circulation of air in the inside of the helmet worn by the user.

[0009] A further object of the invention is to realize a protective helmet as defined above, wherein said movement of the visor is obtained, both upwards and downwards, with a simple movement, without having recourse to encumbering means or locking and unlocking levers, and therefore without distraction danger for the user.

[0010] A not last object of the invention is to realize a protective helmets that has not in its inside levers or means for moving the visor, i.e. elements that, being exposed, can be damaged and that create, besides, anti-esthetic effects.

[0011] A further object of the invention is to provide users with a protective helmet having a partializable visor, suitable to ensure a high level of resistance and reliability in the time, and also such as to be easily and economically realizable.

[0012] According to the present invention, these and still other objects are achieved by the protective helmet with partializable visor, which helmet comprises a bubble or cap from plastic material, a sector or under-plate fixed to the opposite sides of the bubble in the rear zone, a visor articulated on said under-plate through opposed projecting collars formed along the internal front of said visor, each of said under-plate comprising:

- a through-opening circumscribed on the inner front by perimetric shoulders;
- a mobile cursor included in said opening and connected to one of the collars of the visor;
- a shaped through-slot obtained before the opening, oriented in a substantially vertical direction and constituting the sliding and stabilization seat in fixed points of a pawl integral with the internal front of each side of visor;
- at least a through opening for housing a hook-like tilting lever, suitable to position with its upper end in the lower external part of said slot.

[0013] The constructive and functional characteristics of the protective helmet with a partializable visor of the present invention will be better understood thanks to the following description, wherein reference is made to the attached drawings which represent a preferred, non limiting embodiment, and wherein:

Figure 1 shows the schematic lateral view of a side of the visor in closing position, i.e. entirely lowered; Figure 2 shows the schematic lateral view from a side of said partially lifted visor, i.e. in the position that precedes its partialization with a translation towards the outside;

Figure 3 shows the schematic lateral view on a side of said visor, lowered again, but in condition of par-

tialization;

Figure 4 shows the schematic lateral view on a side of said partially lifted visor, i.e. in the position that precedes its departialization to return to the original condition of adhesion to the helmet,

Figure 5 shows the schematic view of the helmet under-plate, as well as the cursor and the mobile lever associated to it.

[0014] With starting reference to Figure 1, the protective helmet of the present invention whose partial profile is indicated by the broken lines 10, has on the opposed sides, in the rear zone, sectors or under-plates 12, provided with a plurality of shaped seats for the connection of the visor, indicated by 14 and made from polycarbonate or other suitable materials. The opposite sectors 12, only one of which is shown in the figures, are advantageously obtained from plastic material, independent on the bubble or cap of helmet 10. Each of sectors or under-plate 12 basically comprises a through-opening 16 having an ovoid shape, obtained in the rear part, and a shaped through-slot 18 that develops in a tendentially vertical direction and forms the sliding and stabilization seat in given points of a cylindrical pawl 20, integral with the internal front of visor 14. Additional superposed openings 22, 24, separated by a bridge 26, form the seat for a hook-shaped lever 28, which will be described later on.

[0015] In the through opening 16, circumscribed on the internal front by perimetric shoulders 17, a cursor 30 is housed, which is provided with a through-hole 32; cursor 30, on the front facing the shaped slot 18, is provided with at least a seat 34 that houses elastic means, for instance two helicoid springs 35. The opposite end of said spring encounters one of the shoulders obtained along sector 12 about the through-opening 16. A projecting collar 36 abuts in hole 32 of cursor 30, said collar being integral with the internal front of visor 14; said collar 36, obtained on both sides of visor 14, constitutes the traditional rotation pin, to cause the same to lift and lower with respect to helmet 10. The shaped through-slot 18, that has the function of a cam for pawl 20 of visor 14, develops arch-like vertically along sector 12; said slot is realized in such a way as to form, along its way, different stabilization points or seat for pawl 20, in particular three points defined by cavities having a semicircular profile. The first stabilization point, indicated by 38 in Figure 2, is obtained at the lower end of the shaped slot 18; Figure 1 shows the condition wherein pawl 20 is placed when it abuts in said first stabilization seat or point 38. The second stabilization point, adjoining the first one, is indicated by 40; in its inside pawl 20 is positioned during the partialization step of visor 14, as will be specified later on with reference to the working. The third stabilization point, indicated by 42, is formed at about half-way of the longitudinal development of the shaped through-slot 18, and consists of a cavity having a substantially semicircular profile obtained along a side

of said slot. Along the opposite sectors or under-plates 12 there are additionally created two holes 44 for housing conventional screws suitable to fix the sector or under plate 12 to the bubble of helmet 10.

[0016] Under the shaped slot 18, superposed openings 22, 24 are realized wherein said hook like lever 18 is located; said openings 22, 24 are obtained on at least one of the opposite sectors or under plate 12. Opening 24 is formed in the upper part and adjoins the extreme lower zone of slot 18, before the same; bridge 26, obtained integrally with said under-plate, separate the upper opening 24 from the lower one 22, of greater width. Lever 28, preferably made from plastic material, comprises a branch 46 that is located in said openings 22, 24 under bridge 26.

[0017] Lever 28 is perforated in correspondence of the lower end of branch 46, for the insertion of a pin 50 that forms the rotation fulcrum; said pin engages with the under-plate 12. The upper end of branch 46 of said lever has, in the direction of slot 18, a cavity 52 having a semicircular profile suitable to house pawl 20, when visor 14 is in partialization condition. Starting from the base, under pin 50, branch 46 of lever 28 is bent towards the outside with a substantially U-shaped profile, forming a shoulder 28'; the upper end of the latter is bent towards the inside to a limited extent and forms, as indicated in detail in Figure 5, a lip 54 facing branch 46. As a whole, lever 28 must protrude externally with respect to visor 14, and for this purpose, the latter is provided with a notch or lowering 56 obtained along its lower edge. The same visor, in a position adjoining said lowering 56, has an integral extension 60, developed substantially in line with the lower edge of said visor and is constituted by a small cord.

[0018] To connect the protruding collar 36, integral with the internal front of visor 14, at cursor 30 there is provided that the through-hole 32 of the latter be circumscribed on the internal front by opposite annular crowns 62 spaced by diametrically opposite openings 64, as shown in Figure 5; in parallel, collar 36 has complementary ridges 66, indicated in Figures 1 to 4, to realize a clutch of bayonet-like tie. In order to keep lever 28 suitably guided, its branch 46 is advantageously provided with a transversal lowering 68, cooperating with bridge 26 that separates openings 22, 24 of sectors or under-plates 12.

[0019] The working of the helmet of the present invention, in particular the movement of visor 14 associated to the same, takes place as follows.

[0020] Figure 1 shows schematically the condition of closing or total lowering of visor 14; pawl 20 abuts in the shaped through-cavity 18 in correspondence of the first stabilization point 38, obtained at the lower end of said cavity. At the time when the user wishes to obtain an air flow circulating in the inside of the helmet, he lifts by hand visor 14, whose pawl 20 shifts in correspondence of the above standing stabilization point 40; this condition is schematized in Figure 2. During such lifting, the

cord-shaped extension 60 that protrudes from the external front of visor 14 strikes lip 54 of lever 28, causing a backwards tilting of the same; the upper end of branch 46 of lever 28 is therefore led to occupy cavity 18 in correspondence of the first stabilization point 38 left free from pawl 20. The subsequent hand-lowering of visor 14 brings back pawl 20 in alignment with the first stabilization point 38, but not in the vicinity of the same; said pawl, in fact, abuts in cavity 52 formed at the upper end of branch 46 of lever 28. Now, pawl 20 is therefore in a more advanced position with respect to the original position of total closing of visor 14, as shown in Figure 3.

[0021] During the lowering, visor 14 is therefore obliged to translate in the direction of the front side, moving away along the whole perimeter from the bubble or cap of helmet 10. This causes a partialization, i.e., the creation of a slit between the visor and the helmet, both in the lower and the upper parts, with the ensuing possibility of a continuous re-circulation of the air-flow.

[0022] At the time when the user wishes to close visor 14, i.e. to realize a de-partialization, he lifts the visor by two positions, corresponding to as many snaps, bringing pawl 20 into the third seat or stabilization point 42, obtained at about half-way of the development of cavity 18; this lifting realizes a travel longer than the initial one, so that the cord-shaped extension 60 passes over lip 54 of shoulder 28' of lever 28.

[0023] Such passing over is easily possible thanks to the elasticity of lever 28, that initially expands towards the outside and then returns to the original position. Now, the user lowers again visor 14, so that extension 60 strikes from up downwards lip 54 and determines the backwards tilting of branch 46 of lever 28. As a consequence the seat or first stabilization point 38 of cavity 18, wherein pawl 20 abuts is free. In this way one returns to the closing or total lowering of visor 14. In all the lifting and lowering steps, said visor remains adequately tensioned thanks to springs 35 associated to cursor 30; such elastic tensioning also performs the function of keeping the visor, once it is entirely lowered, in perfect adhesion with the gasket (not shown) that circumscribe the opening of the visor, and which is traditionally fixed to the helmet.

[0024] As can be inferred from the above, the advantages achieved by the invention are evident. In the protective helmet of the present invention, the visor can be easily positioned in such a way as not to create, with respect to the body of the helmet, slits for the passage of air both along the lower edge and the upper edge. This double opening allows an adequate air circulation, which is a basic condition for the comfort of the user. Besides, the movement of the visor is obtained in a simple and direct manner, with fixed sequences that can be made with one only hand, to the advantage of the safety of the driver.

[0025] While the present invention has been described above with reference to some preferred embodiments reported only by way of non limiting example, it

is evident that many variants and modifications may be introduced by those skilled in the art, in the light of the above description. Therefore, the present invention intends to encompass all the modifications and variants that fall within the spirit and the protection scope of the following claims.

Claims

1. A protective helmet with a partializable visor comprising a bubble or cap (10) from plastic material, a sector or under-plate (12) fixed to the opposite sites of the bubble (10) in the rear zone, a visor (4), articulated on said under-plate (12) through said opposite projecting collars (36) obtained along the internal front of said visor, wherein each of the under-plate (12) comprises:
 - a through-opening (16) circumscribed on the inner front by perimetric shoulders (17);
 - a mobile cursor (30) included in said opening (16) and connected to one of the collars (36) of visor (14);
 - a shaped through-slot (18) obtained before opening (16), oriented in a substantially vertical direction and constituting the sliding and stabilization seat in fixed points of a pawl (20) integral with the internal front of each side of visor (14);
 - at least a through opening (24) or (26) for housing a hook-like tilting lever (28), suitable to position with its upper end in the lower external part of said slot (18).
2. The protective helmet according to claim 1, wherein said shaped slot (18) has along its development three spaced points (38), (40), (42) for the stabilization of pawl (20) the first of which is formed at the lower end of said slot.
3. The protective helmet according to claim 1 or 2, wherein a branch (46) of lever (28), oriented in a substantially vertical direction, goes through said openings (22), (24) separated from each other by a transversal bridge and obtained on the front and partly in the lower portion with respect to slot (18).
4. The protective helmet according to any of the preceding claims, wherein said visor (14) has on the opposite sides and along the lower edge a lowering (56) for the passage of the part bent towards the inside or shoulder (18') of lever (28), and in a position adjoining said lowering, an integral extension or tang (60).
5. The protective helmet according to any of the preceding claims, wherein branch (46) of lever (28) is

provided in the lower portion with a through-hole for a pin (50) connected to under-plate 12) and constituting the tilting fulcrum of said lever.

6. The protective helmet according to any of the preceding claims, wherein the upper end of branch (46) of lever (28) has a cavity (52) having a profile complementary to that of pawl (20). 5

7. The protective helmet according to any of the preceding claims, wherein the upper end of the externally bent shoulder (28') of lever (28) is bent towards the inside, forming a lip (54) facing branch (46) of said lever and intended for engaging in said tang (60), said branch (46) having a transversal lowering (68) cooperating with bridge (26) that separates openings (22) and (24). 10
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8. The protective helmet according to any of the preceding claims, wherein said cursor (30) is provided with a through-hole (32) for housing collar (36) of visor (14), and has at least a seat (34) for a spring (35) striking one of the shoulders that circumscribe opening (16), the latter having an ovoid shape. 20
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9. The protective helmet according to any of the preceding claims, wherein said through-hole (32) of cursor (30) is delimited on the internal front by opposite annular crowns (32) spaced by diametrically opposed openings (64) for the bayonet-joint of collar (36) of visor (14) provided in parallel with complementary ridges (66). 30

10. The protective helmet according to any of the preceding claims, wherein each under-plate (12) is provided with one or more holes (44) for housing screws or the like that fix the under-plate to bubble (10). 35

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FIG. 1

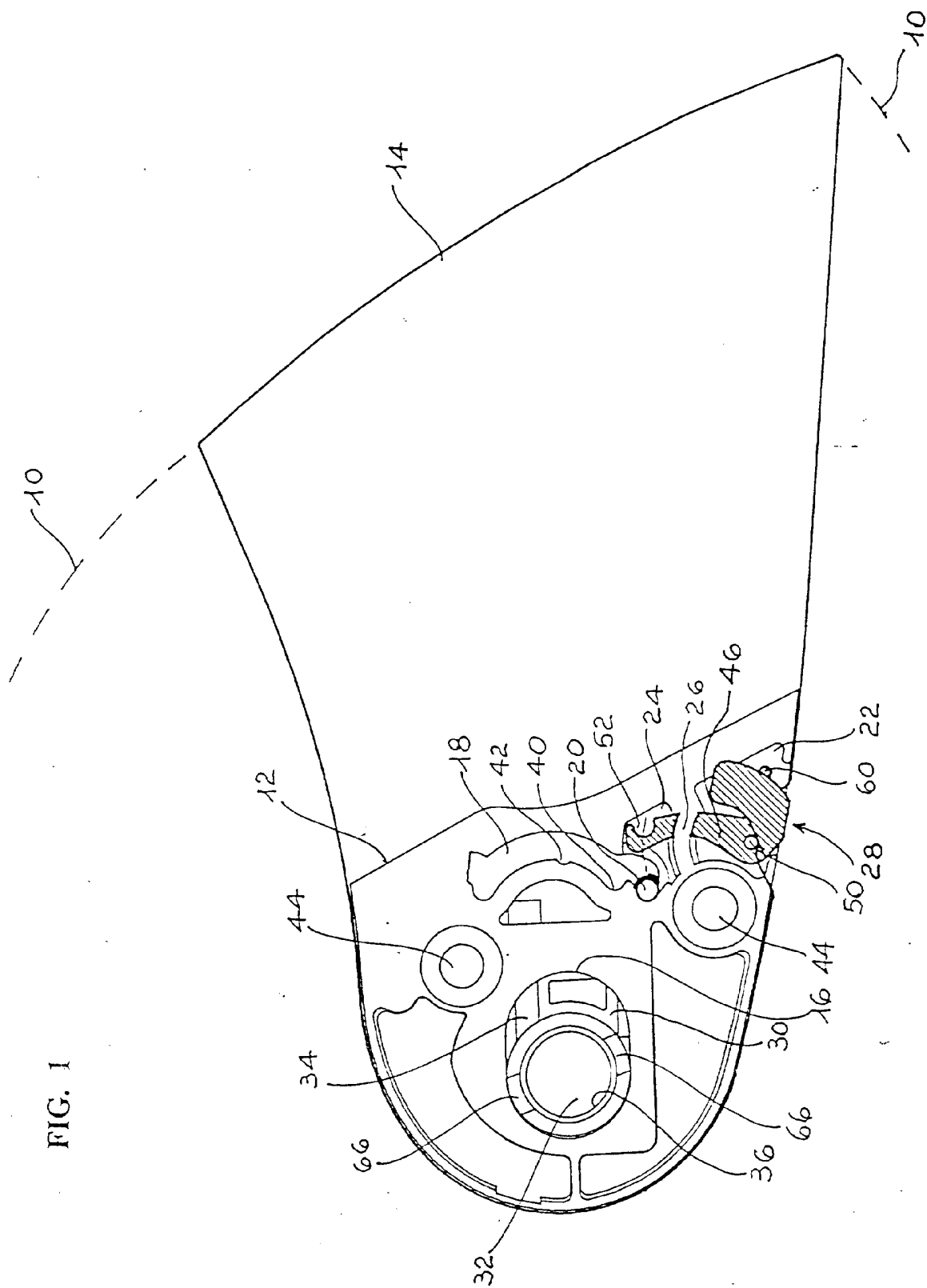


FIG. 2

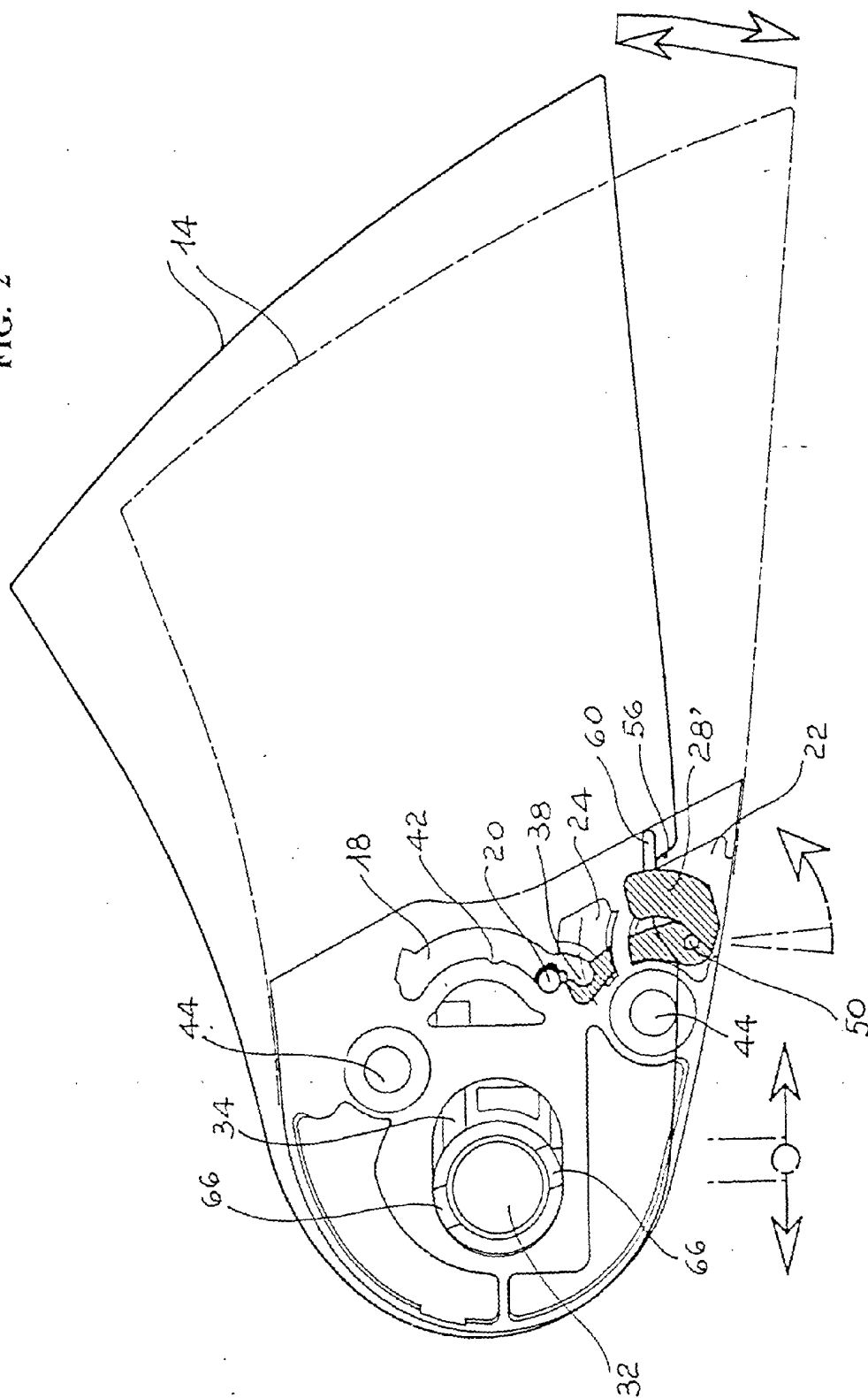
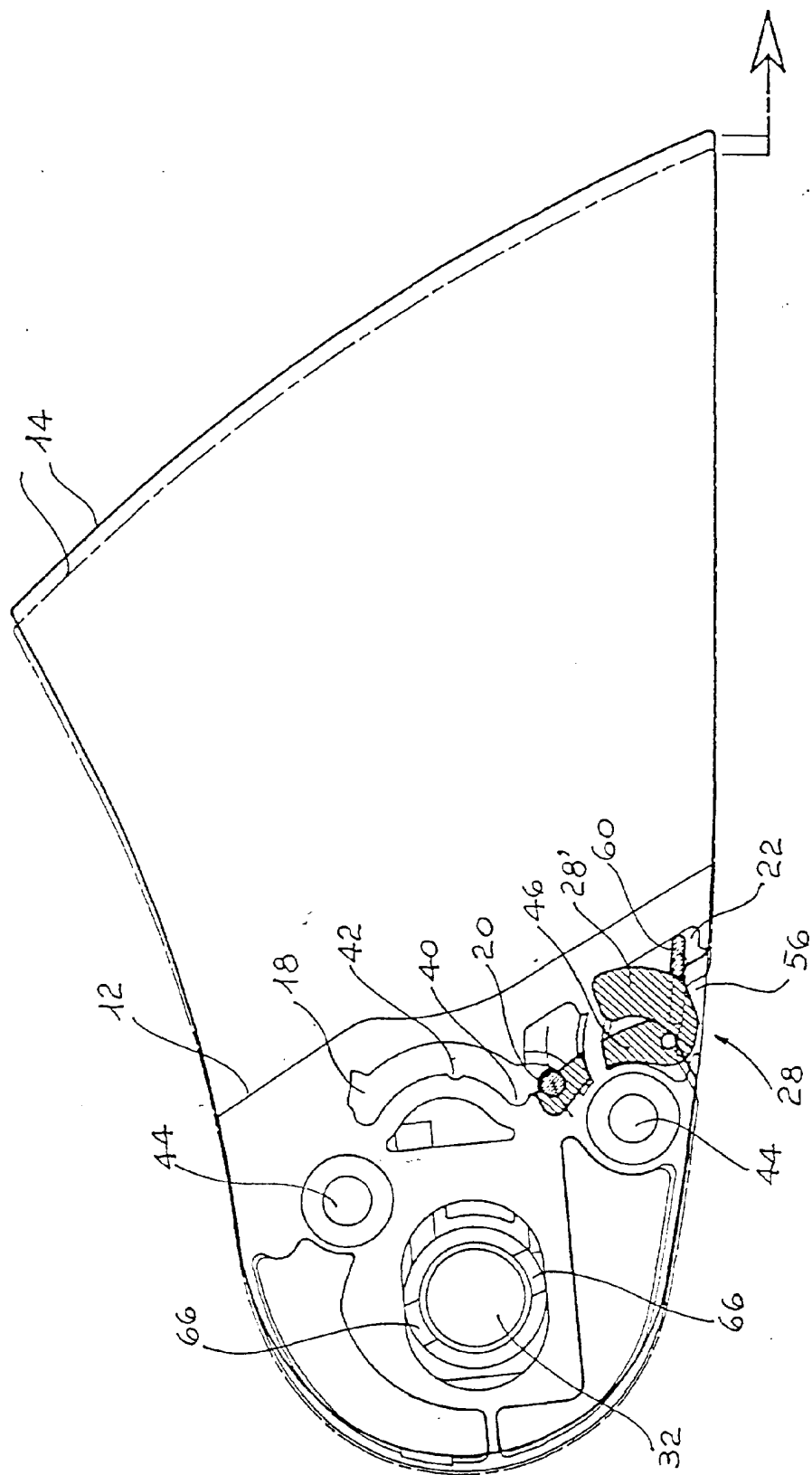


FIG. 3



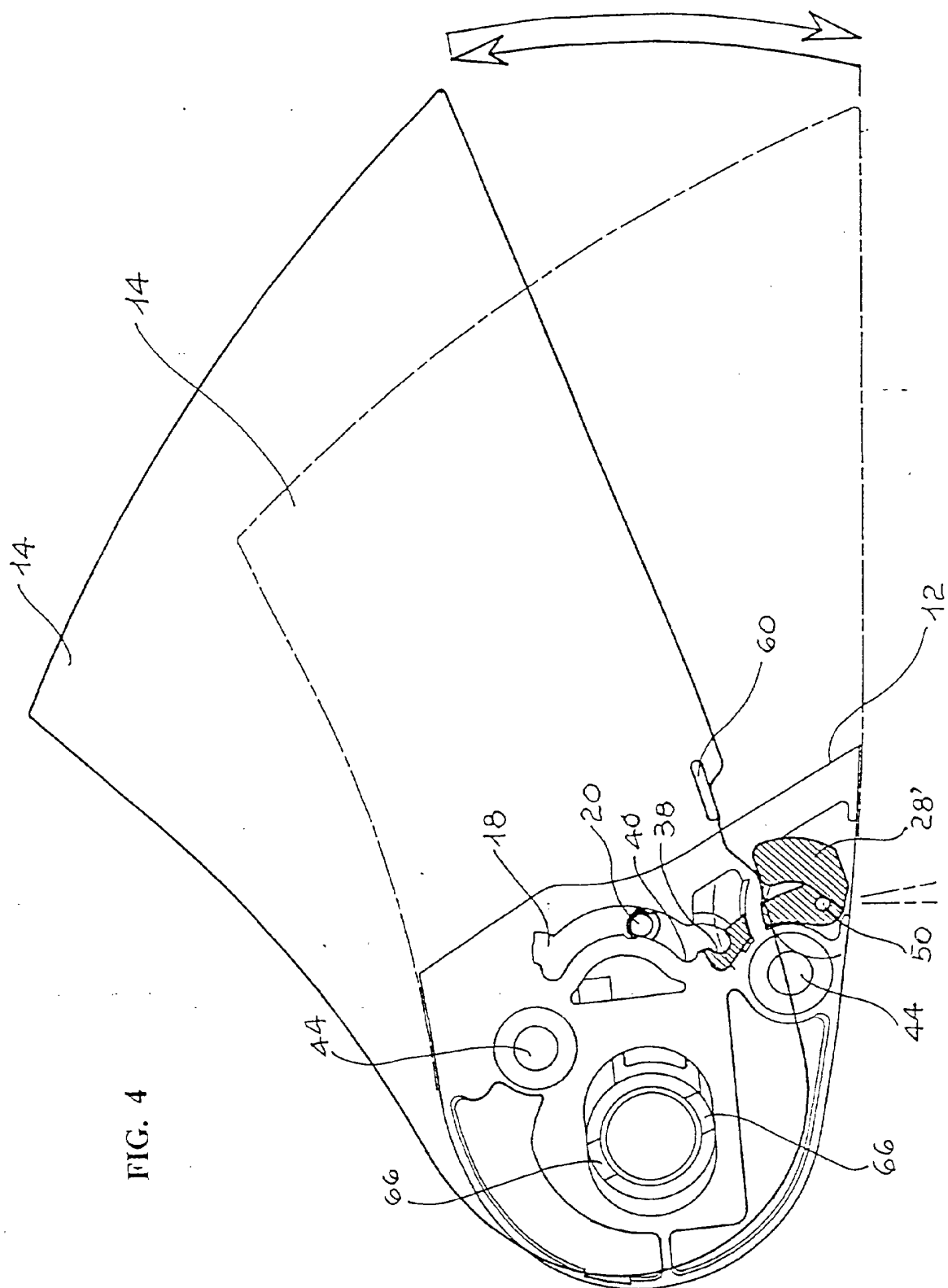
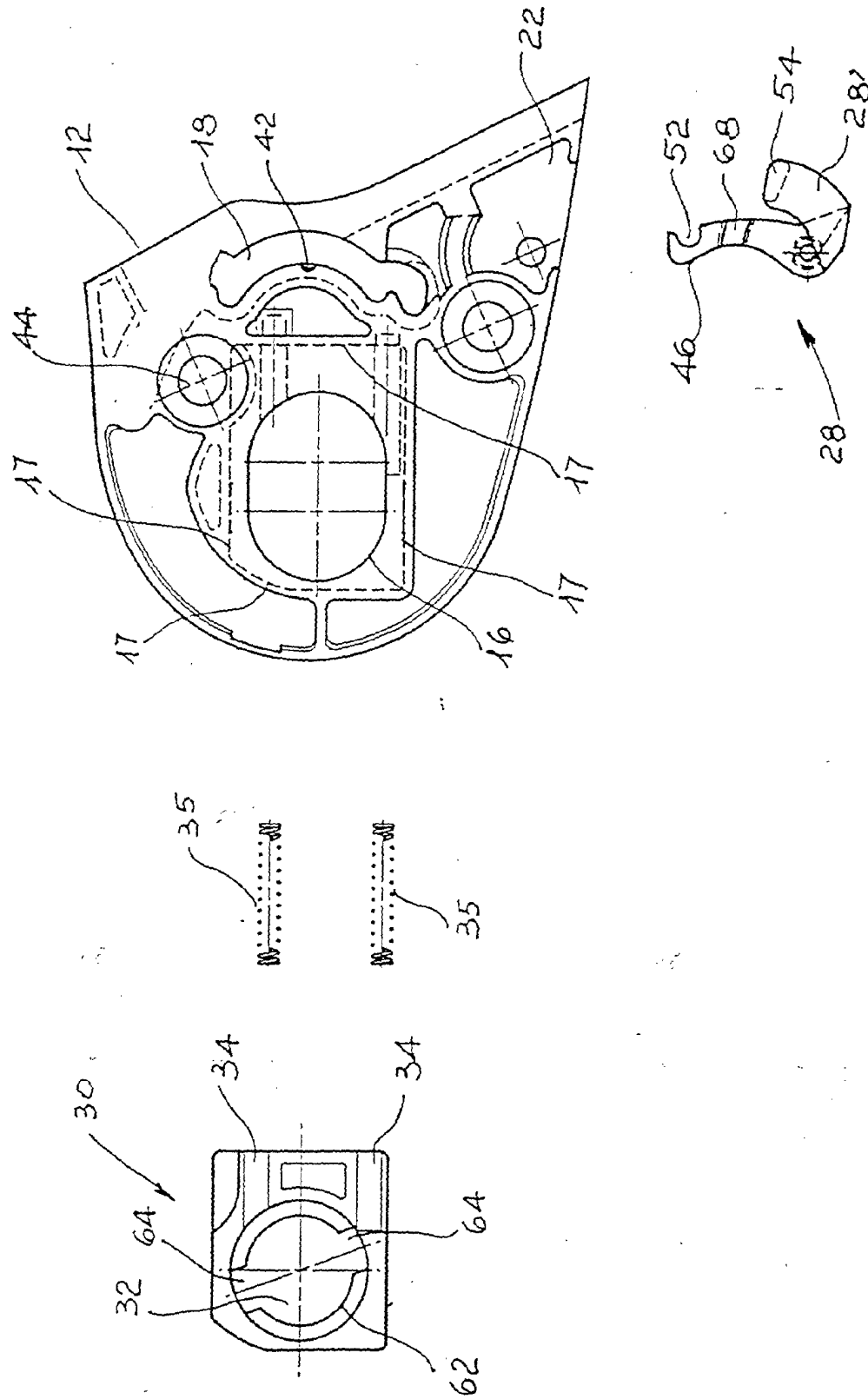


FIG. 5





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EUROPEAN SEARCH REPORT

Application Number
EP 01 11 4957

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Place of search THE HAGUE		Date of completion of the search 16 October 2001	Examiner Bourseau, A-M
<div>CATEGORY OF CITED DOCUMENTS</div> <div> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document </div> <div> T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document </div>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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